

Claims

## I Claim:

1. An integrated circuit having a lid, said integrated circuit comprising:

a substrate having a flat surface and extending a first length;

a lid having a recess and a foot portion, said lid having a second length shorter than said first length and being positioned on said flat surface of said substrate; and

a bonding agent positioned on said flat surface adjacent said foot portion of said lid.

2. The integrated circuit of claim 1 further comprising a bonding agent below said foot portion of said lid.

3. The integrated circuit of claim 2 wherein said foot further comprises a lip.

4. The integrated circuit of claim 3 wherein said bonding agent surrounds said foot portion and extends over said lip.

5. The integrated circuit of claim 1 wherein said integrated circuit comprises a ball grid array.

6. An integrated circuit having a lid, said integrated circuit comprising:

a substrate;

a first component positioned on said substrate;

a lid having a recessed portion adapted to receive said first component and having a foot portion positioned on said substrate;

a second component positioned on said substrate outside said foot portion; and

an adhesive seal on said substrate adjacent said foot and covering said second component, said adhesive seal forming a bond between said lid and said substrate.

7. The integrated circuit of claim 6 wherein said first component comprises a flip chip.

8. The integrated circuit of claim 6 wherein said second component comprises a discrete component.

9. The integrated circuit of claim 8 wherein said integrated circuit comprises a ball grid array.

10. The integrated circuit of claim 9 further comprising a printed circuit board receiving said ball grid array.

11. An integrated circuit having a lid, said integrated circuit comprising:

a substrate;

a die positioned on said substrate;

a lid having a recessed portion adapted to receive said die and having a foot portion; and

a seal formed between said lid and said substrate by curing an adhesive positioned on said substrate adjacent said foot portion of said lid.

12. The integrated circuit of claim 11 further comprising a second seal formed by an adhesive placed between said foot portion and said substrate.

13. The integrated circuit of claim 11 wherein said seal prevents the release of gases during said curing.

14. The integrated circuit of claim 13 wherein said lid further comprises a vent enabling the release of gases during said curing.

15. The integrated circuit of claim 11 further comprising a thermal gel between said lid and said die.

16. A method of securing a lid to an integrated circuit, said method comprising the steps of:

providing a substrate having a surface for receiving said lid;

positioning a foot portion of said lid on said surface of said substrate; and

applying a bonding agent outside said foot portion of said lid, said bonding agent forming a seal between said substrate and said lid.

17. The method of claim 16 wherein said step of positioning said foot portion of said lid on said surface comprises positioning four edges of said lid within four edges of said substrate.

18. The method of claim 16 further comprising a step of applying a bonding agent between said foot portion of said lid and surface of said substrate.

19. The method of claim 16 further comprising a step of attaching a component on a surface of said substrate outside said foot portion of said lid.

20. The method of claim 16 wherein said step of applying said bonding agent outside said foot portion of said lid comprises applying a bonding agent over said component.

21. A method of securing a lid to an integrated circuit, said method comprising the steps of:

providing a lid comprising edges having a first length;

positioning said lid on a substrate of said integrated circuit, said substrate having a second length greater than said first length of said lid; and  
providing a seal outside said edges of said lid.

22. The method of claim 21 further comprising a step of positioning a first component on said substrate within said lid.

23. The method of claim 21 further comprising a step of positioning a second component on said substrate outside of said lid.

24. The method of claim 23 wherein said step of providing said seal outside said edges of said lid comprises a step of providing an adhesive seal over said second component.

25. The method of claim 21 further comprising a step of providing a vent in said lid to release gases from a recess in said lid.

26. A method of securing a lid to an integrated circuit, said method comprising the steps of:

providing a substrate having a surface for receiving said lid;

positioning said lid having a vent on said substrate;

applying an adhesive on said substrate around the edges of said lid to form a seal between said substrate and said lid;

curing said adhesive; and

releasing gases by way of said vent during said step of curing said adhesive.

27. The method of claim 26 further comprising a step of positioning a component on said substrate within a recess of said lid.

28. The method of claim 26 further comprising a step of positioning a component on said substrate outside said lid.

29. The method of claim 28 wherein said step of applying said adhesive on said substrate comprises applying said adhesive on said component on said substrate outside said lid.

30. The method of claim 26 further comprising a step of providing an adhesive between a foot portion of said lid and said substrate.